

Digital Soil Hardness Tester
Manual

XII Other cautions

Affirm items before the force gauge's repair

	Symptom	cause or phenomenon	Treatment
Power	press power on key has no display	batteries has no electricity	Recharge
	can't charge	converter of unconformity when charging	please affirm: AC110V→DC9.4V AC220V→DC9.4V
Testing value	inaccurate testing value	error is too big	poise proofread value (refer to proofread method)
other	parameter chaos	SET setting error	press setting key for more than 4s to reset delivery setting
	system halted accidentally	has no reflection by pressing any key	press "reset" key

Special notes

Digital soil hardmeter includes a variety of specification for user's selection. Users can select the appropriate specification of instrument according to the value of the force of the tested products. The scientific use of test range is 10%-100% of the full range. The measuring department is not recommended to use the 1% or less of the full range of the instrument.

I Functional features

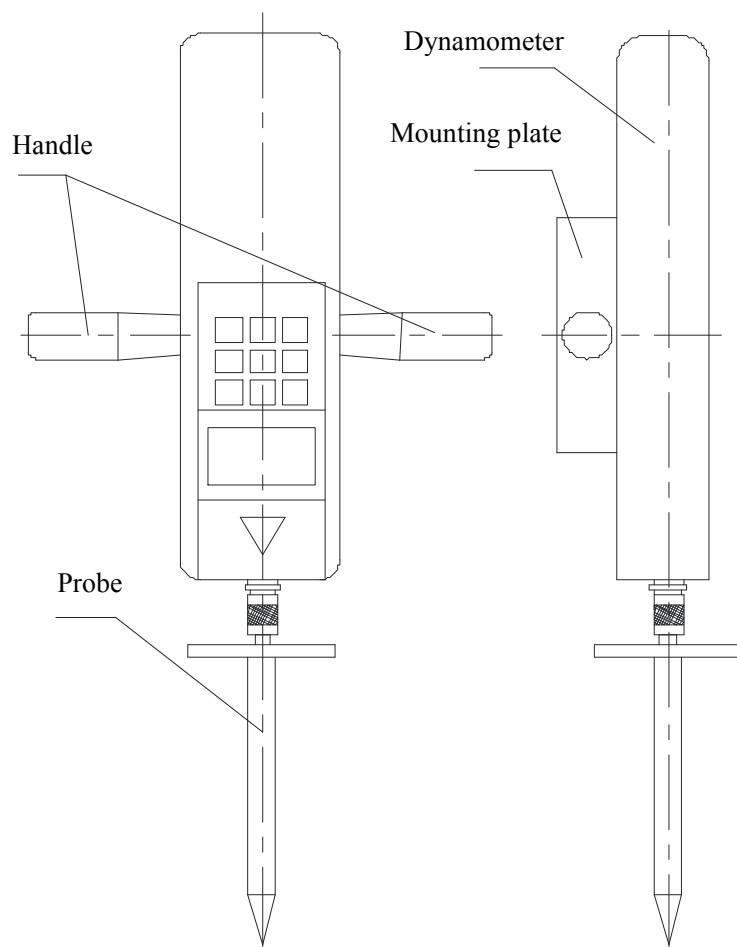
- 1、High-precision and high-resolution: large-screen LCD display, with backlight function (backlight for night use), and positive, inverted reverse function of digitals on the screen.
- 2、Has a battery capacity display: divide into 3, 2 and 1 grids. If too low electricity, the instrument will automatically shut down.
- 3、Gravity acceleration setting function: users can input the exact value of gravity acceleration at their discretion to allow the test more precise.
- 4、Peak value maintaining function: maintain the peak value display until zero adjustment manually.
- 5、Automatic peak function: Maintain to display the peak values for 2 s before automatically elimination.
- 6、Large memory storage function: can store 896 test values.
- 7、Data output function: data can be input in the computer for various analyses through data links.
- 8、Auto-off time setting: with automatic off-time setting, 10min-90 min automatic shutdown can be set.
- 9、High quality charging power supply: 100-240v of charging voltage can be available, suitable for most domestic and foreign areas.

II Technical Parameter:

- 1、Model:TYD-2.
- 2、Maximum load:50Kg (Kg,Ng and ib Three units can be automatically converts).
- 3、Resolution:0.1Kg.
- 4、Accuracy:±0.5%.
- 5、Measuring depth:0~450mm.
- 6、Power: charging power supply:220V/AC; Continuous operating time of battery:6~8 hours.
- 7、Stability: temperature drift :0.2uV/°C (0-60°C); Null drift:≤ 0.1%/8hour /FS.

- 8、 Calibration range: full-scale calibration.
- 9、 Ambient temperature:0~+60℃.
- 10、 Ambient humidity:≤ 80%.
- 11、 Allowable overload:150%.
- 12、 Power supply mode:5nickel cyanogen battery /220V AC charge 4~6 hours.

III structural sketch:



. 2.

4. Don't pull the power wire of charger to pull socket, avoid the wire break and thus suffer electric shock.
5. please clean the gauge by soft cloth. Immerge the cloth in water with cleanser, dry it and then use it to clear dust and dirt.

Note: don't use volatile chemical substances to clean (for example propellant, thinner and alcohol)

6. Please don't operate this gauge at following environment
 - a. moist environment
 - b. dusty environment
 - c. the place where use oil and chemical substances
 - d. the place where has hupocenter around
7. Please use and store at the range of stated temperature and humidity, or it may result in apparatus failure.
8. Don't tear, repair and change this gauge by yourself, because these actions may result in permanent fault of apparatus.
9. other safe cautions.

. 11.

of digitals are displayed. Press the "Setting" key to display "FULL", and then display a row of digitals, hang up the full-scale weight, after stabilizing, press the "setting" key to automatically shut down. After calibration, the calibrated data are stored in the instrument. If there is any error, press and hold the "Setting" key to restore the ex-factory setting state; press and hold the "MEM" key to return to the previous calibration state.

i. Accident crash rapid reset: reset key is provided on the side, press the reset switch with a hard object, you can shut down.

XII Safe cautions

Cautions

If the operation is wrong, the apparatus may be damaged and serious accident may be occur. The manual indicate important items for prevent accidents and the use method, please read it carefully before using the apparatus. Safekeep it after reading in case of read it again. If measuring impulse load, please choose the type whose peak load is double of that impulse load.

Warning

1. when destructive testing, users should wear protection mask and gloves in case of splash matter injury body.
2. Don't use damaged or seriously curving and transformative clamp. self-made clamp should refer to the relevant parameter of this manual (our company also provide kinds of clamp, customers can purchase additionally according to demands)

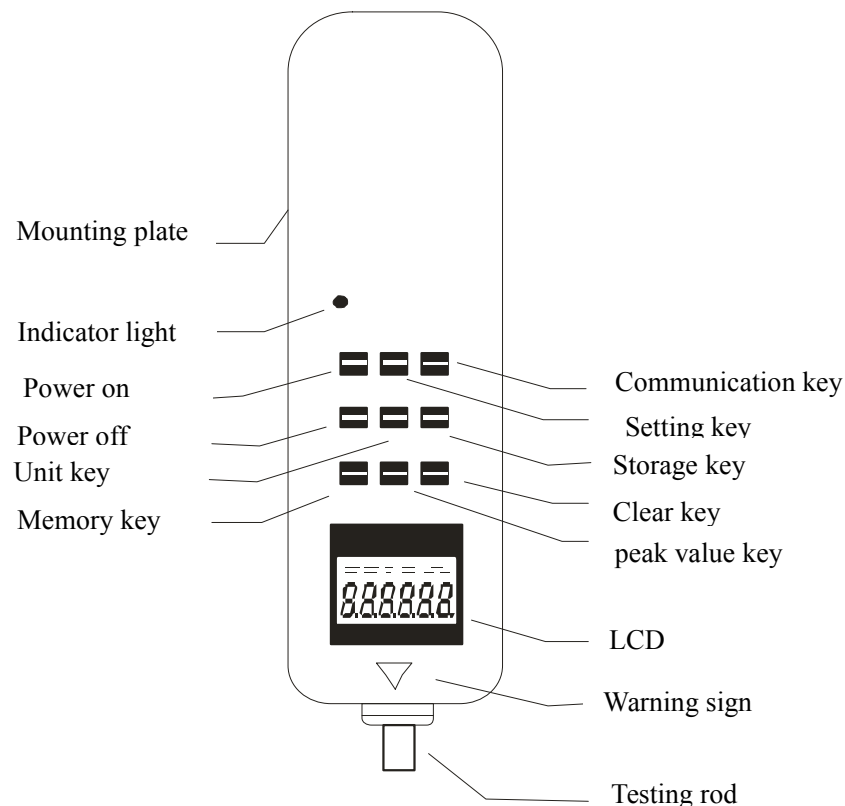
Safe cautions

1. Please use complement charger to charge, or it may result in circuit failure and even fire.
2. Don't use power except charger's rated voltage, or it may result in electric shock and fire.
3. Don't use wet hand to pull or plug socket, or it may result in electric shock.

. 10.

V Description of press key

(refer to the following two drawings)



1. ON button

Press this key, switch on this power supply, and the indicator light will light up, and the model will display on the LCD screen. When 0.00 displays on the LCD screen, start the operation. Note: sometimes, when the power is on, there will be zero drift value display of analog signals on the screen, i. e. the zero drift of numerical values are displayed, at this time, just press the "zero clearing" button.

. 3.

2. OFF button

Press this key and turn off the power supply. Note: whenever press this key, the power is off, but the stored memory data will not disappear.

3. DATA button

When pressing this key, the stored test data (memory data) will be transferred and displayed on the screen, at this time, the "MEM" flickers firstly to display the time of memory, and automatically display the memory data within 2 seconds. If you intend to withdraw the memory function interface, just press the "zero clearing" key to exit.

4. Unit button

Press this key to switching of the measuring unit, including three units -N, Kg and lb. Press the key once, switch to the next unit.

5. Peak button

Press this key to realize the switch among three modes of manual peak value retaining, automatic peak value retaining and real-time value of load. When "PEAK" displays on the LCD screen, it represents to retain the manual peak value, and "AUTO PEAK" displays, it represents automatic peak value retaining, when no display, it represents real-time load value, press this key once, switch to the next mode.

6. PRINT button

When pressing this key, the test data on the screen will be stored (under the manual peak state). The stored data can be called up by the "memory" key, or be deleted by the "zero clearing" key, or be input into the computer for processing and analysis or be printed via data lines. When test data are stored in the computer, "MEM" will be displayed on the LCD screen.

7. Zero button

By pressing this key, the test values on the screen will return to zero.

※ When the weight of the fixture used exceeds 20% of the range and the "zero clearing" key cannot be reset, select a light fixture firstly, and then press the "zero clearing" key to realize zero clearing.

※ When the load used exceeds 20% of the range of this machine and zero

the use of the users(see the notes on the CD-ROM). When exporting the data by connecting the computer, the interface is friendly, and connected to the computer through the data line, and the interface can be used under normal boot state. Meanwhile, two kinds of interface programs (in Chinese and English) are provided.

The special large memory storage function can store 896 test values, which can be manually saved under the "PEAK" (press the "peak" key once) state, or automatically saved under the "AUTO PEAK" state (press the "PEAK" key twice). Press the "MEM" key to check the stored memory values in return, or import the data into the computer through the "data export program" on the CD-ROM.

c. New backlight function key or automatic backlight light under the force is added, if no action within 10s, automatically switch off the back light; or press the "SETTING" key for 6 times to enter "light" state; select "NO" to turn off the backlight, and select "Yes" to start the automatic backlight function.

d. LCD screen reverse display: press the "PRINT" key to display the reading of 180 ° reverse, easy to read the test values from different angles.

e. Press the "PEAK" key twice for the automatic peak value, "AUTO PEAK" will display on the screen; press the "MEM" key, after access to the automatic peak setting interface, press the "PRINT" key, set the automatic peak time in turn (i.e. the retention time of the test values on the screen) from 1s to 9s; after the time is set, press the "setting" key to save and exit from the automatic peak time setting. The default time from factory is 3s.

f. Auto-off time setting can be set to automatic shutdown from 10min to 90 min, or can be set non-automatic shutdown. Press the "setting" key for 7times to enter the "OFFT" interface. Press the "print" key to select the auto-shutdown time. Select "00", do not automatically shut down; after selection, press the "setting" key to save and exit. The default setting time is 50 min.

g. Battery capacity can be divided into 3-grid, 2-grid and 1-grid. The instrument will automatically shut down if the electricity is too low.

h. Measurement calibration: when the measuring sector needs to calibrate the instrument, press and hold the "MEM" key and press the "Boot" key until a row

.9.

a. Firstly press the “Start” key to switch on the apparatus power, when the LCD screen displays stably, press the “PEAK” key to enter the peak measurement mode (if not displaying zero, press “ZERO” key to realize zero clearing, and then insert the instrument tip to the soil by holding the handle of the instrument (during the process inserting the soil, if the instrument tip bumps into the objects such as stone and roots, please unplug the device and replace to measure the soil). The insert depth depends on the customer’s needs.

b. Vertically pull out the soil hardmeter and read the hardness indicative values from the instrument.

3. After measurement

After reading the measurement values.

X Acceleration of gravity alteration

Users can input local acceleration of gravity by himself. Press peak key before power on and then press power on key, thus enter to acceleration of gravity setting interface, after new acceleration input, press setting keypad the system off. It can be used when the power on.

XI Correction

a. Synchronous test software can be connected to the computer for test. The simultaneously displayed test force curve diagram and the detailed test force record during the test process should be saved and printed, subject to different analysis (see the CD-ROM data for the optional functions).

b. Under the “AUTO PEAK” mode for the auto-save test values, the instrument will automatically save the test peak value. Press the “MEM” key to look up the stored data, or export the data into the computer through the “data export program” on the CD-ROM, and those data such “maximum, minimum, average, deviation value, qualified maximum value, qualified minimum value, qualified average value, testing number, passing number” will automatically display for

clearing cannot be realized by pressing “zero clearing” key, release the load at this time, and then press the “zero clearing” key to realize zero clearing.

※ Press and hold this key for four seconds, the stored test data will be completely cleared (note: under some conditions, these data may not be cleared, it is required to shut down the machine, and restart the machine, and then press this function key to clear all memory data).

8. SET button

Press this key to switch the digital positive and inverted reverse on the screen.

VI Screen display declaration

1. PEAK

When “PEAK” is displayed, it indicates Peak mode (Peak maintaining mode), and the displayer will maintain the display the peak value until manual zero clearing. When “AUTO PEAK” is displayed, it indicates “auto peak” (Automatic release mode of peak maintaining), and the display of peak value will be maintained for 2 seconds and then is cleared automatically. When no “PEAK” is displayed, it indicates “track mode” (Real-time load value mode), the value on the screen will change accordingly with the load.

2. LO BAT

When the voltage drops under 7.0V, the screen will display “LO BAT”, which indicates the voltage is inadequate and it requires charging (Testing can be carried out during charging).

3. MEM

If the data is stored and memorized, “MEM” will be displayed. When pressing “DATA” button to check memorized data, “MEM” will flash.

VII Data storage (memory)

1. Data storage

Under the state of retaining the peak value, after the test is completed, press the "AUTO PEAK" key to store the information and "MEM" word will display on the screen. These stored memory data can be retained after shut down. When referring to the memory data by the "MEM" key, the "MEM" flashes, and the memory frequency will appear, after 2 seconds, the memory numerical value will automatically appear. Press the "PEAK" key to withdraw from the memory to directly access to the test, or input the data into the computer for analysis and processing. This machine can store 896 data. When "OE" is displayed, it is indicated that the 896th datum cannot be stored.

2. Memory clearing

Under the status of general load display, press Zero button for more than 4 seconds, all the memorized data will be completely cleared and "MEM" will disappear. The apparatus can be connected to computer and testing data can be input into computer. Browse and print testing times, average value, maximum value and minimum value and judge if the testing results are in accordance with the requirements.

VIII Description of other functions

1. Description of print function

This function can realize printing of the stored test data through data line output to the computer.

A. Firstly, run the portable CD disc, and open and click the "data export program" file from the files available, and then click the "setup.exe" file, then click "Next" → "Next" → "complete".

B. Connect this instrument with the computer through the data line. Under the condition of start of machine, when zero displays on the LCD screen, double click the shortcut key of "dynamometer communication software 3.0.exe" on the desktop, and then click the "receive" on the pop-up window, the stored test data will be output to the computer through data line. After completion of data

. 6.

receipt, click the "PRINT", click print on the pop-up window, you can print.

2. Description of synchronous test functions

This function can display the synchronous test curve and data when testing.

A. Firstly, run the portable CD discs, open and click the "sync test software" file in the folder available, then click "installation.EXE" file, and then click "next" → always click "Next" → "Completion".

B. For specific operating steps, please download the "digital push-pull meter synchronized test function demonstration" from the column Question of the company's home page, and carry out operations by referring to this presentation.

3. Description of solving the overload state

When the boot alarm starts and displayed data cannot realize zero clearing, the battery power is insufficient or is under severe overload condition at this time.

a. Charge.

b. Press and hold the "setting" button for more than 4 seconds to realize automatic shutdown. After shutdown, press the "start" key to start the machine again to restore the ex-factory setting (if not recovered, it is necessary to change the sensors in the factory).

4. Description to solve the crash state

When the measuring instrument crashes, press the "reset" key on the left side of the measuring instrument.

IX Test (Refer to the structural sketch)

1. Preparation before measurement

a. Install the installation plate and the dynamometer firmly with four M4 screws and hexagon wrench.

b. Connect the probe to the dynamometer and rotate it tightly.

c. Level the soil surface measured.

2. During Measurement

. 7.